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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/662,507	09/14/2000	Richard L. Smith	SUR-3645	2262

1444 7590 03/31/2003

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EXAMINER

BARRY, CHESTER T

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 03/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/662,507

Applicant(s)

SMITH, RICHARD L.

Examiner

Chester T. Barry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 9-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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CTB

~~1, 4, 9, 11 14 R~~~~2, 10 O~~

Claims 1, 9, 12, 14 are rejected under 35 U.S.C. §102(e) as anticipated by Rittmann.

USP 6387262 (filed 6/2000) to Rittmann describes removing nitrate from drinking water by adding hydrogen gas to the water and exposing the hydrogen / water gas mixture to autotrophic denitrifying bacteria supported on a solid hollow fiber membrane. See col 1 lines 30-35, col 2 lines 20-35, col 4 lines 20-43.

Claims 1, 4, 11 are rejected under 35 USC § 103 as unpatentable over Rittmann alone or further in view of Logan. Rittmann does not describe the manner by which the hydrogen gas was generated. It would have been obvious to have supplied the hydrogen gas using any known source of hydrogen gas, such as via electrolysis (see, for example, Japanese 59-177385) or steam reforming (see, for example USP 4957514 to Golden at col 1 line 20).¹ Alternatively, it would have been obvious to have generated the hydrogen gas on-site using electrolysis, as suggested by Logan col 6 line 33. Per claim 4, it would have been obvious to have isolated the bacteria from any natural aqueous source known to contain nitrates, such as contaminated groundwater.

Claims 1, 13 are rejected under 35 USC § 103 as unpatentable over Rittmann in view of Logan or Montagnon. Rittmann does not describe filtering the water through sand.

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It would have been obvious to have passed the water after the bioreaction treatment step through a sand filter to remove bacteria therefrom, as suggested by USP 6214607 to Logan or by USP 5087354 to Montagnon.

Claims 1 - 4, 9-13 are rejected under 35 USC § 103 as unpatentable over Logan in view of Yokomori. USP 6214607 to Logan describes addition of a nitrogen source to a contaminated groundwater stream recirculated through a solid-supported bioreactor comprising hydrogen-oxidizing Proteobacteria. Hydrogen gas is added to the column. The hydrogen is locally produced electrolytically. The water is filtered through a sand filter. Yokomori teaches that ammonium nitrate is a conventional nitrogen source for bacterial reactions. It would have been obvious to have used ammonium nitrate instead of ammonium phosphate as the nitrogen source because of Yokomori's teaching. Per claim 4, it would have been obvious to have isolated the bacteria from any natural aqueous source known to contain perchlorates, such as perchlorate-contaminated groundwater. Proteobacteria meet the purple, non-sulfur, phototrophic limitation of

¹ The examiner takes official notice of the fact that iron oxide catalysts are well known, commercial, and conventional reforming catalysts.

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claim 2, as shown by USP 5352608 to Kaplan.

USP 4337142 is cited of interest.

Respectfully,

A handwritten signature in black ink, appearing to read "Chester T. Barry", written over a horizontal line.

Exr. Chester T Barry

703-306-5921 direct voice

703-872-9077 direct fax for informal papers only

703-872-9310 fax for formal papers before final action

703-872-9311 fax for 37 CFR 1.116 papers